

## SEQUENCE LISTING

[0355] A sequence listing transmittal sheet and a sequence listing in paper format accompanies this application.

SEQ. ID. NO.:1 HG1015090N1 CLN00493987\_5pv1.a  
ATGCAGATGGTTGTGCTCCCTGCCTGGTTTACCTGCTCTCTGGAGCCAGGTATCA  
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AGTGCCCGCTGCTGCAGCAGGAGGTTCTGCAGAACGTCTCGGATGCTGAGAGCTGTTAC  
CTTGTCCACACCCCTGCTGGAGTTCTACTGAAAAGTGTGTTCAAAACTACCACAATAGA  
ACAGTTGAAGTCAGGACTCTGAAGTCATTCTACTCTGGCCAACAACATTGTTCTCATC  
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AGCGGTTCTGCTATTCCGGAGAGCATTCAAACAGTTGGACGTAGAAGCAGCTTGACCC  
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SEQ. ID. NO.:2 HG1015091N1 NP\_006841:NM\_006850  
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SEQ. ID. NO.:5 HG1015094N1 NP\_006841:NM\_006850\_exon4  
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AACAACTTGTCTCATCGTGTACAACACTGCAACCCAGT

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SARLLQQEVLQNVSQENEMFSIRDSAHRFLFRRAFKQLDVEAALTAKALGEVDILLTWM  
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SEQ. ID. NO.:9 HG1015093P1 NP\_006841:NM\_006850\_exon1  
MNFQQRLQSLWTLA

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DAESCYLVHTLLEFYLKTVFKNYHNRTVEVRTLKSFSTLANNFVLIVSQLQPS

SEQ. ID. NO.:11 HG1015090N0 CLN00493987\_5pv1.a

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CAGCAGAAATTGTGCCCATGCTTCTTACCCCTCACAACTCTGCCACAGTGTGGGGC  
AGTGGATGGGTGCTTAGTAAGTACTTAATAAAACTGTGGTGTGTTTTGGCCTGCTTTG  
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SEQ. ID. NO.:13 HG1015092N0 CLN00453866\_5pv1.a

TATAGAACCAAGGCTTGCCTGCAAACCTTACTTCTGAAATGACTTCCACGGCTGGGACGG  
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SEQ. ID. NO.:16 HG1014901N0 CLN00108891\_5pv1.a  
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 AACTCCTGGGAATCATCAAGGAGTGGCATTCTGAGCAACTTGCACTTGAGGAAAT  
 GGTGAACTGGTCATCCATGAAAAAGGGTTTACTACATCTATTCCAAACATACTTCGA  
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 AAATACACAAGTTCTGACCCCTATTGTTGATGAAAAGTGCTAGAAATAGTTGTTGG  
 TCTAAAGATGCAGAATATGGACTCTATTCCATCTATCAAGGGGAATTGAGCTTAAAG  
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 GCTCTGGGCCGAAAATAACTCCTGGGAATCATCAAGGAGTGGCATTCTGAGC

AACTTGCACCTGAGGAATGGTGAACGGTCATCCATGAAAAAGGGTTTACTACATCTAT  
 TCCCCAACATACTTTCGATTCAAGGAGGAAATAAAGAAAACACAAAGAACGACAACAA  
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 GCTAGAAATAGTTGTTGGTCTAAAGATGCAGAATATGGACTCTATTCCATCTATCAAGGG  
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SEQ. ID. NO.:22 HG1019037P1 CLN00108891\_frag2

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SEQ. ID. NO.:25 HG1019038N0 NP\_003801:NM\_003810

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MALLWGLLVLSWSCL

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SEQ. ID. NO.:52 HG1018299P1 18204192:18204191\_1-16  
MRLSLPLLLLLLGAWA

SEQ. ID. NO.:53 HG1018300P1 18204192:18204191\_1-14  
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SEQ. ID. NO.:54 HG1018302P1 23503038:15778555\_1-20  
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SEQ. ID. NO.:55 HG1018303P1 23503038:15778555\_1-16  
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SEQ. ID. NO.:56 HG1018304P1 23503038:15778555\_1-21  
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SEQ. ID. NO.:67 HG1018317P1 37182960:37182959\_1-21  
MRAPGCRLVPLLLLAAAAL

SEQ. ID. NO.:68 HG1018319P1 7437388:1208426\_1-24  
MRLRRRALFPGVALLAAGRLVAA

SEQ. ID. NO.:69 HG1018320P1 7437388:1208426\_1-23  
MRLRRRALFPGVALLAAGRLVA

SEQ. ID. NO.:70 HG1018322P1 NP\_000286:NM\_000295\_1-24  
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SEQ. ID. NO.:71 HG1018323P1 NP\_000286:NM\_000295\_1-18  
MPSSVSWGILLLAGLCCL

SEQ. ID. NO.:72 HG1018324P1 NP\_000286:NM\_000295\_1-23  
MPSSVSWGILLLAGLCCLVPVSL

SEQ. ID. NO.:73 HG1018325P1 NP\_000286:NM\_000295\_1-17  
MPSSVSWGILLLAGLCC

SEQ. ID. NO.:74 HG1018327P1 NP\_000396:NM\_000405\_1-23  
MQSLMQAPLLIALGLLATPAQQA

SEQ. ID. NO.:75 HG1018328P1 NP\_000396:NM\_000405\_1-18  
MQSLMQAPLLIALGLLLA

SEQ. ID. NO.:76 HG1018329P1 NP\_000396:NM\_000405\_1-25  
MQSLMQAPLLIALGLLATPAQAH

SEQ. ID. NO.:77 HG1018330P1 NP\_000396:NM\_000405\_1-20  
MQSLMQAPLLIALGLLLATP

SEQ. ID. NO.:78 HG1018331P1 NP\_000396:NM\_000405\_1-21  
MQSLMQAPLLIALGLLLATPA

SEQ. ID. NO.:79 HG1018333P1 NP\_000495:NM\_000504\_1-23  
MGRPLHLVLLSASLAGLLLLGES

SEQ. ID. NO.:80 HG1018334P1 NP\_000495:NM\_000504\_1-19  
MGRPLHLVLLSASLAGLLL

SEQ. ID. NO.:81 HG1018335P1 NP\_000495:NM\_000504\_1-20  
MGRPLHLVLLSASLAGLLLL

SEQ. ID. NO.:82 HG1018336P1 NP\_000495:NM\_000504\_1-15  
MGRPLHLVLLSASLA

SEQ. ID. NO.:83 HG1018337P1 NP\_000495:NM\_000504\_1-21  
MGRPLHLVLLSASLAGLLLLG

SEQ. ID. NO.:84 HG1018338P1 NP\_000495:NM\_000504\_1-17  
MGRPLHLVLLSASLAGL

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MRIAVICFCLLGITCA

SEQ. ID. NO.:87 HG1018342P1 NP\_000573:NM\_000582\_1-15  
MRIAVICFCLLGITC

SEQ. ID. NO.:88 HG1018344P1 NP\_000574:NM\_000583\_1-16  
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MKRVLVLLAVAFG

SEQ. ID. NO.:90 HG1018347P1 NP\_000591:NM\_000600\_1-25  
MNSFSTSAFGPVAFSLGLLLVLPA

SEQ. ID. NO.:91 HG1018348P1 NP\_000591:NM\_000600\_1-24  
MNSFSTSAFGPVAFSLGLLLVLPA

SEQ. ID. NO.:92 HG1018349P1 NP\_000591:NM\_000600\_1-27  
MNSFSTSAFGPVAFSLGLLLVLPAFP

SEQ. ID. NO.:93 HG1018351P1 NP\_000598:NM\_000607\_1-18  
MALSWVLTVLSLLPLLEA

SEQ. ID. NO.:94 HG1018353P1 NP\_000604:NM\_000613\_1-19  
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SEQ. ID. NO.:95 HG1018354P1 NP\_000604:NM\_000613\_1-25  
MARVLGAPVALGLWSLCWSLAIATP

SEQ. ID. NO.:96 HG1018355P1 NP\_000604:NM\_000613\_1-21  
MARVLGAPVALGLWSLCWSLA

SEQ. ID. NO.:97 HG1018356P1 NP\_000604:NM\_000613\_1-23  
MARVLGAPVALGLWSLCWSLAIA

SEQ. ID. NO.:98 HG1018357P1 NP\_000604:NM\_000613\_1-31  
MARVLGAPVALGLWSLCWSLAIATPLPPTSA

SEQ. ID. NO.:99 HG1018359P1 NP\_000726:NM\_000735\_1-26  
MDYYRKYAAIFLVTLSVFLHVLHSAP

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MDYYRKYAAIFLVTLSVFLHVLHS

SEQ. ID. NO.:101 HG1018362P1 NP\_000884:NM\_000893\_1-18  
MKLITILFLCSRLLLSLT

SEQ. ID. NO.:102 HG1018363P1 NP\_000884:NM\_000893\_1-19  
MKLITILFLCSRLLSLTQ

SEQ. ID. NO.:103 HG1018364P1 NP\_000884:NM\_000893\_1-16  
MKLITILFLCSRLLLS

SEQ. ID. NO.:104 HG1018365P1 NP\_000884:NM\_000893\_1-23  
MKLITILFLCSRLLSLTQESQS

SEQ. ID. NO.:105 HG1018367P1 NP\_000909:NM\_000918\_1-17  
ML RRALLCLAVAALVRA

SEQ. ID. NO.:106 HG1018369P1 NP\_000930:NM\_000939\_1-23  
MPRSSCCSRSGALLALLQASME

SEQ. ID. NO.:107 HG1018370P1 NP\_000930:NM\_000939\_1-26  
MPRSSCCSRSGALLALLQASMEVRG

SEQ. ID. NO.:108 HG1018372P1 NP\_000945:NM\_000954\_1-23  
MATHHTLWMGLALLGVLDLQAA

SEQ. ID. NO.:109 HG1018373P1 NP\_000945:NM\_000954\_1-22  
MATHHTLWMGLALLGVLDLQA

SEQ. ID. NO.:110 HG1018374P1 NP\_000945:NM\_000954\_1-18  
MATHHTLWMGLALLGVLG

SEQ. ID. NO.:111 HG1018376P1 NP\_001176:NM\_001185\_1-18  
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SEQ. ID. NO.:112 HG1018377P1 NP\_001176:NM\_001185\_1-20  
MVRMVPVLLSLLLLLGPAVP

SEQ. ID. NO.:113 HG1018378P1 NP\_001176:NM\_001185\_1-21  
MVRMVPVLLSLLLLGPAPQ

SEQ. ID. NO.:114 HG1018379P1 NP\_001176:NM\_001185\_1-17  
MVRMVPVLLSLLLLGP

SEQ. ID. NO.:115 HG1018381P1 NP\_001266:NM\_001275\_1-18  
MRSAAVLALLCAGQVTA

SEQ. ID. NO.:116 HG1018382P1 NP\_001266:NM\_001275\_1-15  
MRSAAVLALLCAGQ

SEQ. ID. NO.:117 HG1018383P1 NP\_001266:NM\_001275\_1-14  
MRSAAVLALLCAG

SEQ. ID. NO.:118 HG1018385P1 NP\_001314:NM\_001323\_1-26  
MARSNLPLALGLALVAFCLLALPRDA

SEQ. ID. NO.:119 HG1018386P1 NP\_001314:NM\_001323\_1-18  
MARSNLPLALGLALVAFC

SEQ. ID. NO.:120 HG1018387P1 NP\_001314:NM\_001323\_1-20  
MARSNLPLALGLALVAFCLL

SEQ. ID. NO.:121 HG1018388P1 NP\_001314:NM\_001323\_1-28  
MARSNLPLALGLALVAFCLLALPRDARA

SEQ. ID. NO.:122 HG1018389P1 NP\_001314:NM\_001323\_1-21  
MARSNLPLALGLALVAFCLLA

SEQ. ID. NO.:123 HG1018390P1 NP\_001314:NM\_001323\_1-23  
MARSNLPLALGLALVAFCLLALP

SEQ. ID. NO.:124 HG1018392P1 NP\_001822:NM\_001831\_1-22  
MMKTLFFFVGLLLTWESGQVLG

SEQ. ID. NO.:125 HG1018393P1 NP\_001822:NM\_001831\_1-18  
MMKTLFFFVGLLLTWESG

SEQ. ID. NO.:126 HG1018394P1 NP\_001822:NM\_001831\_1-14  
MMKTLFFFVGLLLT

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SEQ. ID. NO.:128 HG1018397P1 NP\_002206:NM\_002215\_1-29  
MDGAMGPRGLLCMYLVSLLILQAMPALG

SEQ. ID. NO.:129 HG1018398P1 NP\_002206:NM\_002215\_1-30  
MDGAMGPRGLLCMYLVSLLILQAMPALGS

SEQ. ID. NO.:130 HG1018399P1 NP\_002206:NM\_002215\_1-23  
MDGAMGPRGLLCMYLVSLLILQ

SEQ. ID. NO.:131 HG1018400P1 NP\_002206:NM\_002215\_1-31  
MDGAMGPRGLLCMYLVSLLILQAMPALGSA

SEQ. ID. NO.:132 HG1018402P1 NP\_002300:NM\_002309\_1-22  
MKVLAAGVVPLLLVLHWKGAG

SEQ. ID. NO.:133 HG1018403P1 NP\_002300:NM\_002309\_1-23  
MKVLAAGVVPLLLVLHWKGAGS

SEQ. ID. NO.:134 HG1018405P1 NP\_002336:NM\_002345\_1-18  
MSLSAFTLFLALIGGTSG

SEQ. ID. NO.:135 HG1018406P1 NP\_002336:NM\_002345\_1-15  
MSLSAFTLFLALIGG

SEQ. ID. NO.:136 HG1018407P1 NP\_002336:NM\_002345\_1-17  
MSLSAFTLFLALIGGTS

SEQ. ID. NO.:137 HG1018408P1 NP\_002336:NM\_002345\_1-14  
MSLSAFTLFLALIG

SEQ. ID. NO.:138 HG1018410P1 NP\_002402:NM\_002411\_1-18  
MKLLMVVML AALSQHCYA

SEQ. ID. NO.:139 HG1018412P1 NP\_002505:NM\_002514\_1-30  
MQSVQSTSCLRKQCLCLTFLLLHLLGQVA

SEQ. ID. NO.:140 HG1018413P1 NP\_002505:NM\_002514\_1-32  
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SEQ. ID. NO.:141 HG1018414P1 NP\_002505:NM\_002514\_1-28  
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SEQ. ID. NO.:142 HG1018415P1 NP\_002505:NM\_002514\_1-27  
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SEQ. ID. NO.:143 HG1018416P1 NP\_002505:NM\_002514\_1-31  
MQSVQSTSCLRKQCLCLTFLLLHLLGQVAA

SEQ. ID. NO.:144 HG1018418P1 NP\_002892:NM\_002901\_1-26  
MARGGRGRRLGLALGLLLALVLAPRV

SEQ. ID. NO.:145 HG1018419P1 NP\_002892:NM\_002901\_1-22  
MARGGRGRRLGLALGLLLALVL

SEQ. ID. NO.:146 HG1018420P1 NP\_002892:NM\_002901\_1-29  
MARGGRGRRLGLALGLLLALVLAPRVLRA

SEQ. ID. NO.:147 HG1018421P1 NP\_002892:NM\_002901\_1-24  
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SEQ. ID. NO.:148 HG1018422P1 NP\_002892:NM\_002901\_1-23  
MARGGRGRRLGLALGLLLALVLA

SEQ. ID. NO.:149 HG1018424P1 NP\_002893:NM\_002902\_1-25  
MRLGPRTAALGLLLLCAAAAGAGKA

SEQ. ID. NO.:150 HG1018425P1 NP\_002893:NM\_002902\_1-19  
MRLGPRTAALGLLLLCAAA

SEQ. ID. NO.:151 HG1018426P1 NP\_002893:NM\_002902\_1-22  
MRLGPRTAALGLLLLCAAAAGA

SEQ. ID. NO.:152 HG1018427P1 NP\_002893:NM\_002902\_1-18  
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SEQ. ID. NO.:153 HG1018428P1 NP\_002893:NM\_002902\_1-20  
MRLGPRTAALGLLLLCAAAA

SEQ. ID. NO.:154 HG1018429P1 NP\_002893:NM\_002902\_1-21  
MRLGPRTAALGLLLLCAAAAG

SEQ. ID. NO.:155 HG1018430P1 NP\_002893:NM\_002902\_1-23  
MRLGPRTAALGLLLLCAAAAGAG

SEQ. ID. NO.:156 HG1018432P1 NP\_005133:NM\_005142\_1-19  
MAWFALYLLSLLWATAGTS

SEQ. ID. NO.:157 HG1018433P1 NP\_005133:NM\_005142\_1-18  
MAWFALYLLSLLWATAGT

SEQ. ID. NO.:158 HG1018434P1 NP\_005133:NM\_005142\_1-20  
MAWFALYLLSLLWATAGTST

SEQ. ID. NO.:159 HG1018435P1 NP\_005133:NM\_005142\_1-24  
MAWFALYLLSLLWATAGTSTQTQS

SEQ. ID. NO.:160 HG1018436P1 NP\_005133:NM\_005142\_1-16  
MAWFALYLLSLLWATA

SEQ. ID. NO.:161 HG1018437P1 NP\_005133:NM\_005142\_1-17  
MAWFALYLLSLLWATAG

SEQ. ID. NO.:162 HG1018438P1 NP\_005133:NM\_005142\_1-14  
MAWFALYLLSLLWA

SEQ. ID. NO.:163 HG1018440P1 NP\_005445:NM\_005454\_1-17  
MHLLLFQLLVLLPLGKT

SEQ. ID. NO.:164 HG1018442P1 NP\_005555:NM\_005564\_1-18  
MPLGLLWLGLALLGALHA

SEQ. ID. NO.:165 HG1018443P1 NP\_005555:NM\_005564\_1-20  
MPLGLLWLGLALLGALHAQA

SEQ. ID. NO.:166 HG1018444P1 NP\_005555:NM\_005564\_1-15  
MPLGLLWLGLALLGA

SEQ. ID. NO.:167 HG1018446P1 NP\_005690:NM\_005699\_1-29  
MRHNWTPDLSPLWVLLLCAHVVTLLVRAT

SEQ. ID. NO.:168 HG1018447P1 NP\_005690:NM\_005699\_1-24  
MRHNWTPDLSPLWVLLLCAHVVTL

SEQ. ID. NO.:169 HG1018448P1 NP\_005690:NM\_005699\_1-28  
MRHNWTPDLSPLWVLLLCAHVVTLLVRA

SEQ. ID. NO.:170 HG1018450P1 NP\_006560:NM\_006569\_1-19  
ML PLTMTVLILLPTGQA

SEQ. ID. NO.:171 HG1018451P1 NP\_006560:NM\_006569\_1-18  
ML PLTMTVLILLPTGQ

SEQ. ID. NO.:172 HG1018452P1 NP\_006560:NM\_006569\_1-21  
ML PLTMTVLILLPTGQAAP

SEQ. ID. NO.:173 HG1018454P1 NP\_006856:NM\_006865\_1-15  
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SEQ. ID. NO.:174 HG1018456P1 NP\_036577:NM\_012445\_1-26  
MENPSPAAALGKALCALLLATLGAAG

SEQ. ID. NO.:175 HG1018457P1 NP\_036577:NM\_012445\_1-25  
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SEQ. ID. NO.:176 HG1018458P1 NP\_036577:NM\_012445\_1-24  
MENPSPAAALGKALCALLLATLGA

SEQ. ID. NO.:177 HG1018459P1 NP\_036577:NM\_012445\_1-28  
MENPSPAAALGKALCALLLATLGAAQP

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MKGWGWLALLGALLG

SEQ. ID. NO.:181 HG1018465P1 NP\_055582:NM\_014767\_1-24  
MRAPGCRLVPLLLLAAAALAEKG

SEQ. ID. NO.:182 HG1018466P1 NP\_055582:NM\_014767\_1-19  
MRAPGCRLVPLLLLAAA

SEQ. ID. NO.:183 HG1018467P1 NP\_055582:NM\_014767\_1-22  
MRAPGCRLVPLLLLAAAALA

SEQ. ID. NO.:184 HG1018468P1 NP\_055582:NM\_014767\_1-20  
MRAPGCRLVPLLLLAAAAA

SEQ. ID. NO.:185 HG1018469P1 NP\_055582:NM\_014767\_1-26  
MRAPGCRLVPLLLLAAAALAEGLDA

SEQ. ID. NO.:186 HG1018470P1 NP\_055582:NM\_014767\_1-21  
MRAPGCRLVPLLLLAAAAL

SEQ. ID. NO.:187 HG1018472P1 NP\_055697:NM\_014882\_1-18  
MSLGQSACFLSIARSRS

SEQ. ID. NO.:188 HG1018474P1 NP\_056965:NM\_015881\_1-18  
MQRLGATLLCLLLAAAVP

SEQ. ID. NO.:189 HG1018475P1 NP\_056965:NM\_015881\_1-19  
MQRLGATLLCLLLAAAVPT

SEQ. ID. NO.:190 HG1018476P1 NP\_056965:NM\_015881\_1-22  
MQRLGATLLCLLLAAAVPTAPA

SEQ. ID. NO.:191 HG1018477P1 NP\_056965:NM\_015881\_1-16  
MQRLGATLLCLLLAAA

SEQ. ID. NO.:192 HG1018478P1 NP\_056965:NM\_015881\_1-21  
MQRLGATLLCLLLAAAVPTAP

SEQ. ID. NO.:193 HG1018480P1 NP\_057603:NM\_016519\_1-26  
MSASKIPLFKMKDLILILCLLEMSFA

SEQ. ID. NO.:194 HG1018481P1 NP\_057603:NM\_016519\_1-28  
MSASKIPLFKMKDLILILCLLEMSFAVP

SEQ. ID. NO.:195 HG1018483P1 NP\_149439:NM\_033183\_1-18  
MEMFQGLLLLLLSMGGT

SEQ. ID. NO.:196 HG1018484P1 NP\_149439:NM\_033183\_1-20  
MEMFQGLLLLLLSMGGTWA

SEQ. ID. NO.:197 HG1018485P1 NP\_149439:NM\_033183\_1-16  
MEMFQGLLLLLLSMG

SEQ. ID. NO.:198 HG1018487P1 NP\_644808:NM\_139279\_1-18  
MTMRSLLRTPFLCGLLWA

SEQ. ID. NO.:199 HG1018488P1 NP\_644808:NM\_139279\_1-20  
MTMRSLLRTPFLCGLLWAFC

SEQ. ID. NO.:200 HG1018489P1 NP\_644808:NM\_139279\_1-26  
MTMRSLLRTPFLCGLLWAFCAPGARA

SEQ. ID. NO.:201 HG1018490P1 NP\_644808:NM\_139279\_1-23  
MTMRSLLRTPFLCGLLWAFCAPG

SEQ. ID. NO.:202 HG1018492P1 NP\_660295:NM\_145252\_1-13  
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SEQ. ID. NO.:203 HG1018493P1 NP\_660295:NM\_145252\_1-16  
ML LLLTLALLGGPTWA

SEQ. ID. NO.:204 HG1018494P1 NP\_660295:NM\_145252\_1-14  
ML LLLTLALLGGPT

SEQ. ID. NO.:205 HG1018495P1 NP\_660295:NM\_145252\_1-17  
ML LLLTLALLGGPTWAG

SEQ. ID. NO.:206 HG1018497P1 NP\_689534:NM\_152321\_1-25  
MEAAPSRFMFLFLLLTCELAAEVAA

SEQ. ID. NO.:207 HG1018498P1 NP\_689534:NM\_152321\_1-21  
MEAAPSRFMFLFLLLTCELAA

SEQ. ID. NO.:208 HG1018500P1 NP\_689848:NM\_152635\_1-18  
MPPFLLLTCLFITGTSVS

SEQ. ID. NO.:209 HG1018501P1 NP\_689848:NM\_152635\_1-16  
MPPFLLLTCLFITGTS

SEQ. ID. NO.:210 HG1018502P1 NP\_689848:NM\_152635\_1-15  
MPPFLLLTCLFITGT

SEQ. ID. NO.:211 HG1018504P1 NP\_689968:NM\_152755\_1-21  
MGPVRLGILLFLFLAVHEAWA

SEQ. ID. NO.:212 HG1018506P1 NP\_766630:NM\_173042\_1-29  
MRHNWTPDLSPLWVLLLCAHVVVTLLVRAT

SEQ. ID. NO.:213 HG1018507P1 NP\_766630:NM\_173042\_1-24  
MRHNWTPDLSPLWVLLLCAHVVTL

SEQ. ID. NO.:214 HG1018508P1 NP\_766630:NM\_173042\_1-28  
MRHNWTPDLSPLWVLLLCAHVVVTLLVRA

SEQ. ID. NO.:215 HG1018510P1 NP\_776214:NM\_173842\_1-23  
MEICRGLRSHLITLLLFLFHSET

SEQ. ID. NO.:216 HG1018511P1 NP\_776214:NM\_173842\_1-25  
MEICRGLRSHLITLLLFLFHSETIC

SEQ. ID. NO.:217 HG1018513P1 NP\_783165:NM\_175575\_1-32  
MWAPRCRRFWSRWEQVAALLLLLLLGVPPRS

SEQ. ID. NO.:218 HG1018514P1 NP\_783165:NM\_175575\_1-34  
MWAPRCRRFWSRWEQVAALLLLLLGVPPSLA

SEQ. ID. NO.:219 HG101851SP1 NP\_783165:NM\_175575\_1-29  
MWAPRCRRFWSRWEQVAALLLLLLLGVP

SEQ. ID. NO.:220 HG1018516P1 NP\_783165:NM\_175575\_1-30  
MWAPRCRRFWSRWEQVAALLLLLLLGVP

SEQ. ID. NO.:221 HG1018517P1 NP\_783165:NM\_175575\_1-27  
MWAPRCRRFWSRWEQVAALLLLLLLG

SEQ. ID. NO.:222 HG1018857P1 27482680:27482679\_1-26  
MWCASPVAVVAFCA~~G~~LLVSHPVLTQG

SEQ. ID. NO.:223 HG1018858P1 27482680:27482679\_1-24  
MWCASPVAVVAFCA~~G~~LLVSHPVLT

nucleotide sequence chosen from:

- (a) SEQ ID NOS.:14 and 16-18;
  - (b) a polynucleotide encoding a polypeptide comprising a amino acid sequence chosen from SEQ ID NOS.:15, and 21-22;
  - (c) a complementary polynucleotide comprising a complementary nucleotide sequence that is complementary to the first nucleotide sequence of (a); and
  - (d) a biologically active fragment of any of (a) – (c); and, wherein the nucleic acid molecule is an isolated molecule.
2. The nucleic acid molecule of claim 1, wherein the nucleic acid molecule is chosen from: a cDNA molecule, a genomic DNA molecule, a cRNA molecule, a siRNA molecule, an RNAi molecule, an mRNA molecule, an anti-sense molecule, and a ribozyme.
3. The nucleic acid molecule of claim 1, further comprising its complement.
4. The nucleic acid molecule of claim 1, wherein the first nucleotide sequence is SEQ ID NO.:17.
5. The nucleic acid molecule of claim 1, wherein the first nucleotide sequence is SEQ ID NO.:18.
6. The nucleic acid molecule of either claim 4 or 5, further comprising a second polynucleotide.
7. The nucleic acid molecule of claim 6, wherein the second polynucleotide comprises a second nucleotide sequence encoding a secretory leader, and the secretory leader is a homologous or heterologous leader.
8. The nucleic acid molecule of claim 7, wherein the secretory leader is a heterologous leader.
9. The nucleic acid molecule of claim 7, wherein the secretory leader is a secretory leader chosen from SEQ ID NOS.:26-223.
10. A polypeptide comprising a first amino acid sequence, wherein the first amino acid sequence is chosen from:
- (a) SEQ ID NOS.:15 and 21-22;
  - (b) a sequence encoded by one of SEQ ID NOS.:14 and 16-18; and
  - (c) an active fragment of (a) or (b); wherein the polypeptide is an isolated molecule.
11. The polypeptide of claim 10, wherein the polypeptide is present in a cell culture.

13. The polypeptide of claim 11, wherein the cell culture is chosen from a bacterial cell culture, a mammalian cell culture, an insect cell culture, and a yeast cell culture.
14. The polypeptide of claim 10, wherein the polypeptide is present in a plant or a non-human animal.
15. The polypeptide of claim 10, wherein the first amino acid sequence is the amino acid sequence of SEQ ID NO.:21.
16. The polypeptide of claim 10, wherein the first amino acid sequence is the amino acid sequence of SEQ ID NO.:22.
17. The polypeptide of claim 10, wherein the polypeptide further comprises a second amino acid sequence, and the second amino acid sequence is a secretory leader, the secretory leader is a homologous leader or a heterologous leader, and wherein the first and second amino acid sequences are operably linked.
18. The polypeptide of claim 17, wherein the secretory leader sequence is a heterologous leader sequence.
19. The polypeptide of claim 18 wherein the heterologous leader sequence is chosen from SEQ ID NOS.:26-223.
20. A polypeptide comprising at least six contiguous amino acids from SEQ ID NO.:24 or encoded by SEQ ID NO.:20.
21. A vector comprising the nucleic acid molecule of claim 1 and a promoter that regulates the expression of the nucleic acid molecule.
22. The vector of claim 21, wherein the vector is a viral vector or a plasmid.
23. The vector of claim 21, wherein the vector is a pTT vector.
24. The vector of claim 21, wherein the promoter is chosen from one that is naturally contiguous to the nucleic acid molecule and one that is not naturally contiguous to the nucleic acid molecule.
25. The vector of claim 21, wherein the promoter is chosen from an inducible promoter, a conditionally-active promoter, a constitutive promoter, and a tissue-specific promoter.
26. A recombinant host cell comprising a cell and the nucleic acid of any of claim 1, 4 or 5, the polypeptide of claim 10, 15, or 16, or the vector of claim 21.
27. The host cell of claim 26, wherein the cell is a prokaryotic cell.

cell, a non-human mammalian cell, an insect cell, a fish cell, a plant cell, and a fungal cell.

30. The host cell of claim 26, wherein the cell is a mammalian cell.
31. The host cell of claim 30, wherein the mammalian cell is a cell of a 293 cell line or a CHO cell line.
32. The host cell of claim 31, wherein the cell is a 293 cell.
33. The host cell of claim 32, wherein the 293 cell is a 293T cell or a 293E cell.
34. An animal injected with the nucleic acid molecule of claim 1 or the polypeptide of claim 10.
35. The animal of claim 34, wherein the animal is a rodent, a non-human primate, a rabbit, a dog, or a pig.
36. A nucleic acid composition comprising the nucleic acid molecule of claim 1 and a carrier.
37. A polypeptide composition comprising the polypeptide molecule of claim 10 and a carrier.
38. A vector composition comprising the vector of claim 21 and a carrier.
39. A host cell composition comprising the host cell of claim 26 and a carrier.
40. The composition of any of claims 36 – 38, wherein the carrier is a pharmaceutically acceptable carrier or excipient.
41. A host cell composition comprising a recombinant host cell comprising:  
a cell;  
a pharmaceutically acceptable carrier or excipient; and  
the nucleic acid of claim 1, the polypeptide of claim 10, and/or the vector of claim 21.
42. A method of producing a recombinant host cell comprising:
  - (a) providing a vector that comprises the nucleic acid molecule of claim 1; and
  - (b) allowing a cell to come into contact with the vector to form a recombinant host cell transfected with the nucleic acid molecule.
43. A method of producing a polypeptide comprising:
  - (a) providing the nucleic acid of claim 1; and
  - (b) expressing the nucleic acid molecule in an expression system to produce the polypeptide.

45. The method of claim 44, wherein the cellular expression system is a prokaryotic or eukaryotic expression system.

46. The method of claim 43, wherein the expression system comprises a host cell transfected with the nucleic acid molecule, forming a recombinant host cell, and the method further comprises culturing the recombinant host cell to produce the polypeptide.

47. The method of claim 43, wherein the expression system is a cell-free expression system chosen from a wheat germ lysate expression system, a rabbit reticulocyte expression system, a ribosomal display, and an *E. coli* lysate expression system.

48. A polypeptide produced by the method of claim 43.

49. A polypeptide produced by the method of claim 46, wherein the host cell is chosen from a mammalian cell, an insect cell, a plant cell, a yeast cell, and a bacterial cell.

50. A method of determining the presence of an antibody specific to the polypeptide of claim 10 in a sample comprising:

- (a) providing a composition comprising the polypeptide of claim 10;
- (b) allowing the polypeptide to interact with the sample; and
- (c) determining whether interaction has occurred between the polypeptide and the antibody.

51. The antibody of claim 50, chosen from a polyclonal antibody, a monoclonal antibody, a single chain antibody, and an active fragment of any of these.

52. The antibody of claim 51, wherein the antibody is a fragment chosen from an antigen binding fragment, an Fc fragment, a cdr fragment, a V<sub>H</sub> fragment, a V<sub>C</sub> fragment, and a framework fragment.

53. The polypeptide of claim 10 or a polypeptide produced by the method of any of claims 43-49, wherein the polypeptide further comprises at least one fusion partner.

54. The polypeptide of claim 53, wherein the fusion partner is chosen from a polymer, a polypeptide, a succinyl group, fetuin, leucine zipper nuclear factor erythroid derivative-2 (NFE2), neuroretinal leucine zipper, mannose motif (mbp1), tetranectin, an Fc fragment, and serum albumin.

55. A method of inhibiting tumor growth comprising:

- (a) providing a composition comprising the polypeptide chosen from any one of claims 10, 15, 16, 48, and an active fragment of any of these; and

contacting tumor cells having a death domain receptor with a polypeptide chosen from any one of claims 10, 15-16, 48, and an active fragment of any of these.

57. The method of claim 56, wherein the tumor cells are human tumor cells.
58. The method of claim 57, wherein the tumor cells are solid tumor cells or leukemic tumor cells.
59. The method of claim 55, wherein tumor cells are chosen from a carcinoma, a mammary adenocarcinoma, and a non-small cell lung carcinoma.
60. The method of claim 57, wherein the tumor cells are a breast tumor, a colon tumor, a lung tumor, a prostate tumor, a bladder tumor, a stomach tumor, and skin cancer.
61. A method for treating of a mammary adenocarcinoma in a subject comprising:
  - (a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and
  - (b) administering the composition to the subject.
62. A method for treating of a non-small cell lung carcinoma in a subject comprising:
  - (a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and
  - (b) administering the composition to the subject.
63. A method for treating of a breast tumor in a subject comprising:
  - (a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and
  - (b) administering the composition to the subject.
64. A method of treating of a lung tumor in a subject comprising:
  - (a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and
  - (b) administering the composition to the subject.
65. A method of treating of a prostate tumor in a subject comprising:

acceptable carrier; and

(b) administering the composition to the subject.

66. A method of treating a colon tumor in a subject comprising:

(a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and

(b) administering the composition to the subject.

67. A method of treating a stomach tumor in a subject comprising:

(a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and

(b) administering the composition to the subject.

68. A method of treating a bladder tumor in a subject comprising:

(a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and

(b) administering the composition to the subject.

69. A method of treating of skin cancer in a subject comprising:

(a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these, and a pharmaceutically acceptable carrier; and

(b) administering the composition to the subject.

70. A method of treating a glioblastoma in a subject comprising:

(a) providing a composition containing a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these; and a pharmaceutically acceptable carrier; and

(b) administering the composition to the subject.

71. A pharmaceutical composition comprising:

(a) a polypeptide chosen from any of claims 10, 15-16, 48, and an active fragment of any of these;

(b) an anti-cancer agent; and

chosen from a chemotherapeutic agent, a radiotherapeutic agent, an anti-angiogenic agent, and an apoptosis-inducing agent.

73. The pharmaceutical composition of claim 72, wherein the chemotherapeutic agent is chosen from a steroid, a cytokine, a cytosine arabinoside, fluorouracil, methotrexate, aminopterin, an anthracycline, mitomycin C, a vinca alkaloid, an antibiotic, demecolcine, etoposide, mithramycin, chlorambucil, and melphalan.

74. A method of treating a tumor in a subject comprising:
- (a) providing a first composition comprising fragments of mature APO2L polypeptide;
  - (b) providing a second composition comprising an anti-cancer agent different from the polypeptide of 10; and
  - (c) administering the first and second compositions to the subject.
75. The method of claim 74, wherein the second composition comprises a monoclonal antibody composition or a chemotherapeutic agent or another polypeptide.
76. The method of claim 74, wherein the second composition reduces expression of Akt or survivin.
77. The method of claim 76, wherein the Akt inhibitor is SH-6.
78. The method of 76, wherein the tumor is a glioma or glioblastoma.
79. The method of claim 74, wherein the tumor is a multidrug resistant tumor.
80. The method of claim 79, wherein the multidrug resistant tumor is an osteosarcoma.
81. The method of claim 74, wherein the second composition comprises another polypeptide.
82. The method of claim 81, wherein the other polypeptide is an interferon.
83. The method of claim 82, wherein the interferon is interferon gamma.
84. The method of claim 83, wherein the tumor is Ewing's sarcoma.
85. The method of claim 74, wherein the second composition comprises a chemotherapeutic agent.
86. The method of claim 85, wherein the chemotherapeutic agent is doxorubicin, epirubicin, pirarubicin, or cisplatin.
87. The method of claim 86, wherein the tumor is prostate cancer.

89. The method of claim 88, wherein the inhibitor of NF- $\kappa$ B is N-acetyl-L-leucinyl-L-leucinyl-ILnorleucinal (LLnL).
90. The method of claim 74, wherein the fragments comprises amino acid residues 40 – 45 and 92 – 281, 92 – 281, or 114 – 281 of the full length wild type APO2L polypeptide.